

**WEST**

Generate Collection

Print

L7: Entry 5 of 6

File: USPT

Sep 24, 2002

US-PAT-NO: 6457023

DOCUMENT-IDENTIFIER: US 6457023 B1

TITLE: Estimation of object lifetime using static analysis

DATE-ISSUED: September 24, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Pinter; Shlomit	Haifa			IL
Porat; Sara	Ramat Yishay			IL

## ASSIGNEE-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY	TYPE CODE
International Business Machines Corporation	Armonk	NY			02

APPL-NO: 09/ 751566 [PALM]

DATE FILED: December 28, 2000

INT-CL: [07] G06 F 17/30

US-CL-ISSUED: 707/206

US-CL-CURRENT: 707/206

FIELD-OF-SEARCH: 707/206, 717/132, 717/156, 717/159, 717/8-9, 714/53

PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

Search Selected

Search ALL

	PAT-NO	ISSUE-DATE	PATENTEE-NAME	US-CL
<input type="checkbox"/>	<u>5652883</u>	July 1997	Adcock	707/206
<input type="checkbox"/>	<u>5787447</u>	July 1998	Smithline et al.	707/206
<input type="checkbox"/>	<u>5900001</u>	May 1999	Wolczko et al.	707/206
<input type="checkbox"/>	<u>6045585</u>	April 2000	Blainey	717/8

## OTHER PUBLICATIONS

Witawas Srisa-An Srisa-an Chia-Tien Dan Lo J Morris Chang discloses "a performance analysis of the active memory system", Dept. of Comput. Sci., Illinois Inst. of Technol., Chicago, IL, USA This paper appears in: Computer Design, 2001. ICCD 2001. Procee.\*

P. Cheng et al., "Generational Stack Collection and Profile-Driven Pretenuring", PLDI 1998, pp. 162-173.

S. Dieckman, et al., "A Study of the Allocation Behavior of the SPECjvm98 Java Benchmarks", Proceeding of the 13.sup.th European Conference of Object Oriented Programming (E COOP, 1999), Lisbon, pp. 1-8, Jun. 1999.

Hind, Michael et al., "Interprocedural Pointer Alias Analysis", ACM Transactions on Programming Languages, vol. 21, No. 4, Jul. 1999, pp. 1-47.

Blanchet, B "Escape Analysis [REDACTED] Object Oriented Languages", [REDACTED] cation to Java TM, OOPSLA '99, pp. 20-34.

J.D. Cohi, et al., "Escape Analysis for Java", OOPSLA '99, pp. 1-19.

J. Bogda, et al., "Removing Unnecessary Synchronization of Java", OOPSLA '99, pp. 20-34, USA.

John Whaley, et al., "Compositional Pointer and Escape Analysis for Java Programs", Laboratory for Computer Science, Massachusetts Institute of Technology, Cambridge, MA, 1999, pp. 1-20.

Maryam Emami, et al., Context-Sensitive Interprocedural Points-to Analysis in the Presence of Function Pointers, SIGPLAN 1994, Conf. On Programming Language Design and Implementation, pp. 242-256, USA.

ART-UNIT: 2175

PRIMARY-EXAMINER: Mizrahi; Diane D.

ATTY-AGENT-FIRM: Darby & Darby

ABSTRACT:

A computer implemented technique for the static evaluation of the lifetime of objects allocated in memory is presented, which find application in reducing the overhead of generational garbage collection. The method combines pointer alias analysis with static object size determination, from which accurate generational assignment of newly created objects can be accomplished.

46 Claims, 4 Drawing figures